SECTION C Descriptions and Specifications

ITEM 0001, 0002, 0003, 0004, 0005:

1. The contractor shall provide services in connection with the repair / refurbishment, rebuilding, assembling, and modification of Government Furnished fiberglass composite structures. There may be cases where the repaired structure requires hydrostatic testing. The fiberglass structures will consist of, but will not be limited to, submarine antenna and periscope mast fairings, radomes, antenna closure caps, etc. Work to be performed by the contractor will be identified under individual delivery orders issued by a Contracting / Ordering Officer, within the Naval Surface Warfare Center, Carderock Division, Ship Systems Engineering Station (NSWCCD).

2. The contractor will be reimbursed under the respective Contract Line Item Numbers for direct charges associated with the performance of individual delivery orders, issued hereunder.

3. The contractor will be required to submit a monthly status report in accordance with data item A004 of the attached DD Form 1423.

4. The following are a sampling of the typical drawings and specifications in conjunction with the above:

   Drawing 4491143 (Various Mast Fairing Assemblies)
   Drawing 4491223 (Radar Camouflage Units For the Type 18 Periscope)
   Drawing 9000501 (Trident Faired Mast Assembly)
   Drawing 6744237 (SSN 688 Class No.2 Periscope Fairing Assembly)

   NAVSEA SE110-BK-MMO-010 (Procedures for Inspection, Repairs and Painting of Fiberglass Mast Assemblies)
   CDNSWC SPECIFICATION NO. 962-101C (Critical Item Product Fabrication Specification for Faired Mast)
   NAVSEA 0900-LP-016-9025 (Procedure for Repair and Painting of Radar Camouflage Units Components)

5. **Personnel Requirements:** The following are the Government's minimum personnel requirements for the type of personnel to perform under the requirements listed under paragraph 1., above. The contractor shall be responsible for assigning appropriate technically qualified personnel, in addition to possessing and maintaining the necessary organization and administrative control to perform the tasks outlined herein and as assigned under any resulting delivery order. If during the performance of any resulting delivery order, the Contracting Officer questions that the contractor is using personnel other than those with the minimum qualifications set forth below, the burden of proof shall be on the contractor to substantiate that such personnel do possess said qualifications and experience.

   Any personnel handling classified raw material, example drawing 4491223 or reviewing classified specifications shall be certified in accordance with DOD procedures and attached DD Form 254.

a. Engineer:

The engineer shall have a Bachelor of Science degree in Engineering from an accredited college or university and at least two (2) years in the practice of his / her specialty. Also, four (4) years of demonstrated experience in glass-reinforced plastics, along with at least (2) years of specialized experience in the design, manufacture, operation, maintenance and testing of submarine antenna or periscope fiberglass faired masts.

- OR -

The engineer shall have a Bachelor of Science degree in a Physical Science (Chemistry, Physics, or Material Science) from an accredited college or university. Also, two (2) years of demonstrated experience in glass-reinforced plastics, along with two (2) years experience in engineering.

b. Supervisor:

Seven (7) years experience in a glass-reinforced composite / fiberglass environment, encompassing shop manufacturing, maintenance and repair practices, and the ability to interpret blueprints, technical manuals, documents and work specifications. Also, two (2) years which have been at the supervisory level. An apprenticeship in a glass- reinforced composite / fiberglass industry trade shall be considered four (4) years of experience.

c. Journeyman Mechanic:

Six (6) years experience in a glass-reinforced composite / fiberglass environment, encompassing shop manufacturing (including machining), maintenance and repair practices, and the ability to interpret blueprints, technical manuals, documents and work specifications. An apprenticeship in a glass-reinforced composite / fiberglass trade shall be considered four (4) years of experience.

d. Helper:

Two years experience in a general trade, and the ability to assist journeyman mechanics in the execution of their duties in a glass-reinforced composite / fiberglass environment.

6. Contract Reimbursable Costs

a. Item 0006AA - Material

During the course of this contract, the contractor may be required to furnish materials associated with the performance of repairing / refurbishing, rebuilding and / or modification to Government Furnished fiberglass structures, issued by the Ordering Officer. As such, the contractor will be reimbursed at the actual cost, with any material-handling fee as agreed to by the Contracting Officer.

b. Item 0006AB - Transportation

The contractor's costs for pick-up/delivery of items in conjunction with the tasks performed under authorized delivery orders shall be reimbursed to destination, under Item 0006AB.

c. Item 0006AC – Specialized Subcontracting

During the course of the contract, the contractor may require the services of a sub-contractor to provide specialized services, in support of defined tasks under authorized delivery orders. Such services will be reimbursed under Item 0006AC.

d. Item 0007 – Technical Data

The technical data to be delivered shall be furnished as required by DD Form 1423 (Exhibit A). Technical Data under this contract shall include a CONTRACTOR STATUS REPORT, which shall consist of current status of all delivery orders, issued hereunder, as per DD1423 (Exhibit A).

7. Facilities and Equipment:

Due to the necessity of technical / quality assurance monitoring required in conjunction with the repair / refurbishment, rebuilding and modification of submarine antenna and periscope fairings, it is critical that the contractor possess a facility within 350 miles from NSWCCD, Philadelphia, Pa. This facility must possess a manufacturing / fabrication facility, conducive to repairing, rebuilding and modifying the fiberglass / glass composite structures, as outlined under paragraph 1., above. In addition, the contractor must have available the following equipment and tooling necessary for performance under this contract:

a. MOLDS: Molds for the various sections (e.g. forward / aft) of a mast fairing are required, since it may be necessary to salvage a mast from beyond useable condition, by manufacturing a complete section of the mast.
b. 50 Ft. PLANER MILLER: Will be required in order to machine mast fairing bearing surfaces to the required specifications.
c. Optical Alignment Equipment (scope and fixtures)
d. Surface Plate for Mast Fairing Straightness
e. Paint Booth: Meeting the requirements of NAVSEA SE110-BK-MMO-010, with the capacity to paint a 23ft long mast.
f. Storage Area: A storage area to accommodate classified material, which meets the requirements of DD Form 254.

QUALITY ASSURANCE REQUIREMENTS:

A. Contractor's Quality/Inspection System:

1. The contractor shall provide and maintain a written inspection system, which will assure that all supplies and services submitted to the Government for acceptance conform to contract requirements whether manufactured or processed by the contractor, or procured from subcontractors or vendors. The contractor shall perform or have performed the inspections and tests required to substantiate product conformance to drawing, specifications and contract requirements and shall also perform or have performed all inspections and tests otherwise required by the contract. The contractor's inspection system shall be documented and shall be available for review by the Naval Surface Warfare Center Carderock Division – Philadelphia Site, Naval Business Center, Bldg. 29, 4700 South Broad Street, Phila., PA 19112-1403, Attn. Code 9613, via the DCMA, thirty (30) days after award of contract and throughout the life of the contract. The contractor shall notify the Naval Surface Warfare Center Carderock Division – Philadelphia Site (NSWCCD) in writing of any change to the inspection system. The inspection system shall be subject to disapproval if changes thereto would result in nonconforming product. Vendors currently operating under ANSI/ISO/ASQ Q9001-2000 or MIL-I-45208 quality system will be deemed acceptable under this provision.

a. The Quality/Inspection System shall include the following:

1) Document Control
2) Purchasing
3) Control of Customer Supplied Material (Government Furnished Material)
4) Product Identification and Trace ability
5) Process Control
6) Inspection and Testing
7) Inspection Measuring and Test Equipment Calibration in accordance with the requirements of ANSI/NCSL Z540-1 or ISO 10012-1.
8) Inspection and Test Status
9) Control of Nonconforming Product
10) Corrective Action
11) Handling, Storage, Packaging, and Delivery
12) Records
13) Control of Classified Material.
14) Controls to assure sub-contractors comply with contract quality system requirements.
15) Special Requirements identified in Delivery Orders.

B. Procedures:

1. The contractor shall furnish the following procedures:

a. An inspection plan. This document shall contain as a minimum:

1) Step-by-step method with inspection/verification points.
2) Part Name.
3) Identification of each characteristic to be inspected.
4) Acceptance and reject criteria.
5) Actual dimension recordings.

b. Straightness test procedure, and/or optical alignment procedure. The procedure shall contain as a minimum:

1) Straightness Requirements.
2) Alignment Requirements.
3) Equipment List.
4) Step-by-step Method.
5) Set up.
6) Method of Obtaining Readings.
7) Reading Locations on the Unit.
8) Recording of Test Results.

c. First Production/Production bend test procedure as required per individual delivery orders. The procedure shall contain as a minimum:

1) Test Requirements.
2) Equipment List.
3) Step by Step Method.
4) Set-Up
5) Post Test Inspection Criteria.
6) Post Test Inspection Results.

d. Wall Thickness measurement procedure. The procedure shall contain as a minimum:

1) Wall Thickness Requirements.
2) Equipment List.
3) Step by Step Method.
4) Set-Up
5) Location of Readings.
6) Recording test results and converting the results into a total readout graph and thickness chart.

e. Hydrostatic Test Procedure as required per individual delivery orders.

1) Test Requirements.
2) Set up of Unit in Test Stand.
3) Applied Loads.
4) Step-by-step Method.
5) Applied Cycle.
6) Recording of Test Results.
7) Time Periods for Cycling.
8) Cycle Test Performance Procedure

f. Flexure Test Procedure as required by individual delivery orders' Drawing and/or other Specification.

g. Special Requirements identified in Delivery Orders.

C. Records:

1. For each assembly, component, delivered item, the supplier shall furnish one (1) copy of the following documents correlated to the contract number and serial number assigned to the assembly:

a. For Government-Furnished Material:

1) Certification that the material furnished was utilized in the assembly it was supplied for
2) Document list of all material used in such furnished assembly. For each piece, the list shall include the drawing number, piece number, and component serial letter.

b. For Contractor-Furnished Raw Material:

1) For contractor-supplied material, the contractor shall supply documented verification of raw material by alloy families using simple, direct and rapid analysis methods or a combination of methods (e.g., visual, hardness test, magnetic properties test, acid spot tests, and metal comparator tests).

c. Copies of test reports showing the results of:

1) Hydrostatic Pressure Testing.
2) Optical Alignment
3) Straightness Inspection
4) Wall Thickness Inspection
5) Tests Coupon Testing
6) Insert pullout test under Drawing 28528-1362435. This test is to be accomplished prior to installation of piece 1.
7) Insert pullout test under Drawing SS-128-4491148 and SPI #3059. This test is to be accomplished prior to installation of piece 28.

d. The inspection records shall show the results of every dimension inspected and shall include the inspector's signature and date. The inspection records are to be maintained on Objective Quality Evidence Data Sheets (OQEDS) supplied by the contractor. Recording the results of dimensional inspections on a configuration facsimile of the component as shown on the applicable drawing is an acceptable OQED.

1) ACTUAL measurements are required for the following characteristic:

a) Dimensions with a tolerance of +/- .005 or less"
b) Straightness of .010" per foot or less
c) Geometric characteristics (forms, profile, orientation, location, run out, etc.) with a tolerance of .010" or less
d) Finishes 32 or less.
e) Angles +/- ½ degree or less
f) Torque Records

2) Class 2 Threads shall be inspected in accordance with ASME B1.3, System 21 requirements and Class 3 threads or higher shall be inspected in accordance with ASME B1.3, System 22 requirements.

3) Sampling inspection is permitted under this contract. A sampling plan identifying the parts and the

sample size must be submitted to NSWCCD-Phila code 9613 for approval prior to completion of inspection.

4) Electrical test reports as required by Drawing or Specification.

5) All of the supplied documents shall have complete trace ability to the hardware for inspection purposes. Therefore, whenever applicable, records shall show: contract number, name of contractor, plan number, revision letter, piece number, serial letter/number of finished piece, item nomenclature, material degree of control, and MIC number if SUBSAFE, or Level I.

6) Documented list of all material used in each finished and delivered assembly. A qualification summary sheet shall be provided that will summarize and correlate all of the Objective Quality Evidence to support product quality. The contractor will supply certifications summary sheet blanks, used by the contractor.

7) Records for each assembly, component, delivered item shall identify the inspection, measuring, test equipment, calibration dates and calibration due dates for inspection, measuring, and test equipment used during verifications, inspections, and/or tests.

8) Inspection Forms: Contractor shall utilize the following inspection forms for reporting test data:

(a) NSWCCD Form 104-17-016, Mast Fairing Dimensional Straightness Measurement.
(b) NSWCCD Form 104-15-032, Auto Reflection for Piston Rod Brackets and Cylinder Bearings
(c) NSWCCD Form 104-17-029, Inner Mast Dimensional and Straightness Measurements
(d) NSWCCD Form 104-17-030, Mast Sigma Channel and Aft Internal Bearing Straightness
(e) NAVSHIPS 4646
(f) NAVSHIPS 4647
(g) Special Requirements identified in Delivery Orders.

D. Control of Government Furnished Material (GFM):

1. Material received from NSWCCD will be received accompanied by NSWCCD Philadelphia Material Control Form 154-04-036.

2. NSWCCD Philadelphia will be responsible for completing Material Control upon issue of the material.

3. Upon receipt of material, contractor will inventory material and return two (2) copies of the completed form to NSWCCD Philadelphia, Code 9633.

4. A complete inspection report of visual and dimensional inspections of the GFM conducted by the contractor shall be forwarded to NSWCCD-9613 prior to using the GFM.

5. Material trace ability must be maintained at all times from material to the Material Control Form.

6. Excess material or spoilage is to be returned to the government.

7. Government-Furnished Equipment shall be returned in good and usable condition. If repairs are required, the cost of repairs shall be charged to the contractor.

8. Special Requirements identified in Delivery Orders.

E. Mercury Exclusion Clause:

1. Mercury Contamination: The supplies furnished under this contract shall contain no metallic or mercury compounds and shall be free from mercury contamination (i.e., during the manufacturing process, testing, or inspecting) or shall be on the List of Mercury-Containing Material/Equipment approved by NAVSEA, enclosure (1) of NAVSEAINST 5100.3C. Any material/ equipment so listed shall have label plates as prescribed in enclosure (3) of NAVSEAINST 5100. 3C. The supplies offered shall not have come in direct contact with mercury or any of its compounds nor with any mercury-containing device employing only a single boundary of containment. (A single boundary of containment is one, which is not backed by a seal or barrier.) Mercury contamination of the supplies will be cause for rejection of the material.

2. If there is reasonable cause to suspect the supplies of being contaminated by mercury, the following test may be used to determine whether contamination by metallic mercury exists: Enclose the equipment in a polyethylene bag or close-fitting airtight container and place in an oven at 135 degrees F $\pm$5 degrees F for one hour. Sample the trapped air and if mercury vapor concentration is 0.0 mg/cu meter or more, the material is mercury contaminated insofar as the requirements of this contract are concerned. Mercury vapor concentration can be determined with a mercury vapor detector such as a portable General Electric Vapor Detector (Catalog No. 8257557G-3), Bechman Instrument Model K-23, or other instruments that have equivalent range and capabilities. It should be noted that certain vapors such as benzene interfere with this type of mercury vapor detector and the detector should never be zero adjusted in any suspect atmosphere.

3. If the inclusion of metallic mercury or mercury compounds is required as a functional part of the material furnished under this contract, the contractor shall obtain written approval from NAVSEA before proceeding with manufacture. The contractor's request shall explain in detail the requirement for mercury, identify specifically the parts to contain mercury, and explain the method of protection against mercury escape. Such a request will be forwarded to the Government Inspector or Government Representative with a copy to NAVSEA. Upon approval by NAVSEA, the vendor will provide a warning plate as prescribed by enclosure (2) of NAVSHIPSINST 5100.28 which will include a statement that mercury is a functional part of the item and also the name and location of that part.

4. If, and to the extent that this contract calls for work to be performed by the contractor on a submarine, the contractor, in connection with such work, shall not bring into or utilize in the submarine any instrument or other device containing metallic mercury or mercury compounds, unless such equipment, instrument, or device has been approved by the Naval Sea Systems Command or authorized representative for use on a submarine.

5. The contractor is required to certify via a certificate of compliance that:

a. The supplies furnished under this contract contain no metallic mercury or mercury compounds.

b. The contractor has taken responsible steps to ensure that the supplies furnished under this contract are not contaminated with metallic mercury or mercury compounds.

6. The requirements of this clause shall be included in all subcontracts hereunder. Technical questions pertaining to the requirements of this clause shall be referred to NAVSEA via the Government Inspection or Representative.

F. Special requirements will be identified under individual delivery orders.